REVIEWS

FISHER'S PURCHASING POWER OF MONEY

Professor Irving Fisher's book, *The Purchasing Power of Money*,[1] furnishes an encouraging example of the striking and important results which may be gained in a well-worked field of economic science, even when no revolutionary changes in fundamental principles are proposed. The first half of the volume contains, as the author himself points out, simply a restatement and amplification of the quantity theory, with no essential modifications of the conclusions reached by the classical economists. At every stage of the discussion, however, the reader will find much of value; and taken as a whole it is easily the most comprehensive and satisfactory treatment of the subject which has been formulated. Then follows a brilliant attempt at the statistical verification of the theory, which in some directions opens up a new field for further investigation. In the final chapter, an interesting proposal is brought forward, designed to secure greater stability in prices; a proposal which should prove revolutionary enough to satisfy the most progressive of economists.

In the exposition of the quantity theory, an analysis is first made of the antecedent influences which cause changes in the five familiar magnitudes of the equation of exchange, — the amount of money in circulation, deposits subject to check, their respective velocities of circulation, and the volume of trade. The summary of these influences by the author at the beginning of chapter VIII cannot be improved upon, and may be quoted in full (pp. 149–150):

[1] The Purchasing Power of Money, Its Determination and Relation to Credit, Interest, and Crises, by Irving Fisher, Professor of political economy in Yale University, assisted by Harry G Brown, Instructor in political economy in Yale University. New York: The Macmillan Co, 1911. (pp xxii + 505, $3 net.)

" Purchasing power has been studied as the effect of five, and only five, groups of causes. The five groups are money, deposits, their velocities of circulation, and the volume of trade. These and their effects, prices, we saw to be connected by an equation called the equation of exchange, $MV+M'V'=\Sigma pQ$. The five causes, in turn, we found to be themselves effects of antecedent causes lying entirely outside of the equation of exchange, as follows: the volume of trade will be increased, and therefore the price level correspondingly decreased by the differentiation of human wants; by diversification of industry; and by the facilitation of transportation. The velocities of circulation will be increased, and, therefore, also the price level increased by improvident habits; by the use of book credit; and by rapid transportation. The quantity of money will be increased, and therefore the price level increased correspondingly by the import and the minting of money, and, antecedently, by the mining of the money metal; by the introduction of another and initially cheaper money metal through bimetallism; and by the issue of bank notes and other paper money. The quantity of deposits will be increased, and therefore the price level increased by extension of the banking system and by the use of book credit. The reverse causes, of course, produce reverse effects."

All these propositions are set forth clearly and in the main convincingly. More attention might, indeed, with advantage have been given to certain problems, raised by the issue of bank notes under varying legal provisions; tho a complete analysis would have required much space, and perhaps belongs more properly to a treatise on banking. The analysis of international gold movements also leaves something to be desired in completeness. On grounds of abstract theory issue might be taken, for example, with the unqualified statement that the imposition of tariff duties invariably tends to establish a higher price level. While true for the world at large on account of the lessened volume of trade, it is at least possible that high duties by diverting capital and labor into relatively unproductive

channels may have a contrary effect in the country adopting this policy. The removal of duties by the United States, if it should lessen materially the cost of production in many industries, might in the course of time greatly stimulate our export trade. This increase in exports might exceed that of imports favored by the removal of duties, and in consequence gold imports, and a change in relative price levels would follow, — a higher level here, a lower level elsewhere.

The most illuminating conclusions of the first half of the book are brought together in the eighth chapter, in which the various interactions of changes in each one of the factors in the equation of exchange upon the others are restated and amplified. Upon this subject Professor Fisher is properly at great pains to distinguish between interactions during transition periods, and those which exert an influence normally or in the long run. The following are the causal relations which he finds after transitions are completed. An increase in the supply of money tends to increase deposits subject to check proportionally, because banks increase loans and consequently deposits until the customary relation of the latter to their cash reserves is reached. If confined to a single country, as an increase in the money supply and deposits, an increase in deposits relative to money, and an increase in the velocity of either money or deposits, all tend to raise prices; money is, in consequence, dispersed, either through export, thus slightly raising world prices, or through its greater use in the arts. Lastly, an increase in the volume of trade, which directly tends to lower prices, also tends to increase velocities and the use of deposit currency relative to money, and consequently to neutralize in some measure the falling price tendency. With these propositions, as with those relating to antecedent influences causing changes in the factors in the equation of exchange taken singly, I find myself in entire agreement.

Turning now to transition periods, an additional series of interactions is discovered. Unfortunately the analysis at this stage lacks somewhat in that comprehensiveness

which is one of the distinguishing characteristics of the book as a whole. The transition effects of changes in the supply of money are worked out in detail, but an equally painstaking analysis is not made of the effects of changes in the other factors in the equation of exchange. It is shown very clearly and with ample illustration that the transitional effects of an increase in the supply of money are a more than proportional increase in deposits, some increase in the velocity of both, together with some slight increase in the volume of trade. Hence the transitional effect on prices of an increase in money is greater than its normal effect. Professor Fisher attributes these phenomena solely to the failure of the rate of interest to keep pace with the advance in prices. Borrowers reap an advantage which encourages further borrowing, and lenders, equally regardless of fundamental considerations, for a time gratify the demand. Trade is brisk, and all the transitional effects noted before appear. But sooner or later a day of reckoning comes. "When interest has become adjusted to rising prices, and loans and deposits have reached the limits set for them by the bank reserves and other conditions, the fact that prices no longer are rising necessitates a new adjustment. Those whose business has been unduly extended, now find the high rates of interest excessive. Failures result, constituting a commercial crisis" (p. 73).

The reasoning here seems to be based upon two assumptions, which are far from being satisfactorily or convincingly proved: first, that it is the failure of the rate of interest to keep pace with rising prices that causes the unhealthy expansion which precedes crises; and second, that in the absence of such an increase in the money supply as would permit some normal increase in prices, no transitional increase of serious moment would be possible. Many other causes, however, in addition to the failure of the rate of interest to advance adequately, contribute in the creation of the unhealthy expansion which precedes the outbreak of commercial crises. The uneven advance of commodity prices, to say nothing of the lagging behind

of wages and salaries, may well be given an equal measure of importance. Further, when wages and salaries do advance the advance is apt to be very general, while a considerable and increasing variety of commodities and services are sold at customary prices, susceptible to little or no change during a short period of years. But space lacks for a consideration in detail of this most difficult subject. Enough has perhaps been said to indicate the fragmentary character of the analysis which Professor Fisher has brought forward.

The second assumption, that price changes of a disturbing character would not occur in the absence of the initial stimulus of an increase in the supply of money, would seem to be equally untenable. It would seem entirely possible, tho no doubt less probable, that through the increase of the velocity of the circulation of money and deposits, and the expansion of deposits upon a stationary cash foundation, an increase in prices might occur sufficient to give rise to all the troubles which culminate in a commercial crisis. Further, it may be noted that the possible range of price fluctuation, from causes other than changes in the money supply, is apt to be particularly wide in countries in which general conditions and the temperament of the people favor enterprise and speculative activity. In such countries deposits fall far below the customary ratio to cash reserves in periods of trade reaction, and there is therefore this slack to be taken up in the periods of trade activity, in addition to that expansion of deposits beyond the customary ratio which usually precedes the outbreak of a panic.

The potent influence of the increase of the supply of gold, during the last fifteen years, may perhaps explain Professor Fisher's failure to give specific attention to transition changes in velocities and deposits independent of changes in the supply of money. This incompleteness in the analysis is found conspicuously in the chapter devoted to the historical verification of the quantity theory. As an account of price movements during the last five hundred years, the chapter is excellent. It is easy to show that pronounced price changes

of long duration have been accompanied by corresponding changes in the supply of money. But the chapter contains also a summary account of crises, which leaves the impression that all commercial crises have been preceded by an increase in the supply of money, either specie, government paper, or bank notes. But this is a conclusion to which there are notable exceptions, the most striking of which is the crisis of 1873 in the United States. Professor Fisher does not, indeed, regard it as an exception. He calls attention to the increase in bank note circulation between 1868 and 1873, from $295,000,000 to $341,000,000, but he does not mention that in these years an almost equivalent volume of 3 per cent certificates were retired. These certificates did not circulate as money, but as they were used for bank reserves, their retirement involved a contraction of the available money supply. Again, the increase in the stock of money which preceded the crisis of 1889 in France, of 1890 in England, and 1893 in the United States, was not one which in itself made possible an increase in prices, but rather the reverse. Such increase as occurred would seem to have been due entirely to the expansion of deposits relative to checks, and perhaps also to increasing velocities of circulation. The experience of those years furnishes an interesting instance of the possibility of temporary advances in prices, culminating in a crisis, during a period when the money supply was not increasing fast enough to prevent, in the long run, a lowering of the general price level. Finally it may be observed that during the last fifteen years, notwithstanding the increase in the stock of money, both England and France have escaped crises. After all, general economic conditions, the temper of the business community, and banking operations are fundamental factors to be considered in the analysis of crises. Monetary changes pure and simple would seem to be, at the most, a contributing but not the controlling factor.

The most interesting and valuable part of the book is most certainly chapter XII, which with its appendix makes up nearly a fourth of the volume. Professor Fisher here

in most brilliant fashion subjects the quantity theory to the test of exact measurement, taking for the purpose the period from 1896 to 1909. He finds a remarkably close approximation between the actual course of prices and that which was to have been expected from estimated changes in the factors of the equation of exchange. A similiar attempt was made by Professor Kemmerer, in his *Money and Credit Instruments* (1905). Thanks to the investigations of the National Monetary Commission and to some special investigations made for him by United States Treasury officials, the data made use of by Professor Fisher are much more complete than those available to his predecessor. In particular, he has had the advantage of the two investigations conducted by Professor Kinley regarding check and cash payments, one for the beginning of the period taken for analysis and the other for the end. With these advantages, coupled with numerous improvements in the methods of calculation, Professor Fisher reaches estimates which doubtless make a much nearer approach to actual facts than those resulting from the pioneer work of Professor Kemmerer. Moreover, Professor Fisher makes estimates which had not been attempted by his predecessor, for certain magnitudes in the equation of exchange. Professor Kemmerer estimated the volume of check transactions (M′V′,) but did not offer any separate estimate of the volume of deposits subject to check (M′) and the velocity of circulation of deposit currency (V′).

The most important contribution made by Professor Fisher to the statistical verification of the quantity theory is in connection with the velocity of circulation of money. Here something more was required than the use of more comprehensive data and the refinement of existing methods. An entirely new method is worked out for estimating what has generally been thought beyond direct calculation. The analysis, once made, is simplicity itself, but on that account the immense debt of all students of monetary problems to Professor Fisher is in no wise lessened. The amount of exchanges, effected by means of money (MV), once

determined, the velocity of its circulation is arrived at simply by dividing that magnitude by the amount of money in circulation. But no previous writer has been able to devise a satisfactory method for estimating the amount of exchanges effected by means of money. This magnitude is, according to Professor Fisher, equal to the total money deposited in banks plus the total money wages paid out plus a small miscellaneous item. In countries where deposit banking is highly developed " money, like checks, circulates in general only once outside the banks; but when it passes through the hands of non-depositors (which practically means wage-earners) it circulates once more, thus adding the value of wage payments to the volume of ordinary money circulation, which is equal to the flow of money through banks " (p. 287). A few items composing the small miscellaneous total of money which circulates more than twice may be mentioned to illustrate their obvious insignificance: — the till-paid expenditures of " commercial depositors " in excess of money withdrawn by them from banks; money receipts of non-commercial depositors pocketed instead of being deposited; money payments between " commercila depositors," between " other depositors " and those between " non-depositors." The amount of money withdrawn from banks in 1909 is estimated by Professor Fisher as \$20.7 billions, and the amount of money expended in wages at \$13.1 billions, while the total of various miscellaneous items is estimated at only \$1.3 billions. The relative amount of the latter figure is so small that even if the estimate is far from exact, it would make little difference in the total of money payments, and accordingly in the velocity of the circulation of money. The data for the calculation of the amount of money withdrawn from banks are based upon Professor Kinley's investigations for 1896 and 1909. For other years the figures are interpolated. The amount paid out to wage-earners and other non-depositors is estimated largely from Census and Bureau of Labor returns.

Finally, the volume of trade and the level of prices are

calculated from a variety of data which are brought together in the appendix, but, as no new principles or methods are involved, extended comment is unnecessary. Future investigators, using more adequate data, and further refinements of method, will no doubt arrive at more accurate estimates of these as well as the other magnitudes of the equation of exchange. Professor Fisher has laid a broad and deep foundation. A long step has been taken toward the reasonably exact measurement of price-making factors.

In the final chapter, Professor Fisher attacks the problem of "making purchasing power more stable." Among the remedies which have been proposed at various times in the past, he discovers merit only in the tabular standard. But the complications that would follow its partial adoption make it unsatisfactory, and there seems no way of securing its simultaneous adoption universally by all individuals, as well as by all countries. The remedy which he proposes would require no change whatever in the circulating medium or in the methods of making payments between individuals. International agreement alone would be needed. The proposal is a combination of the tabular standard with the gold exchange standard. Such an arrangement, it is argued, would be not unlike in principle that already set up in India, the Philippines, Mexico, and Panama. "As the system is now operated the coinage is manipulated to keep it at par with gold, that is, to follow the fluctuations of the gold standard wherever they may lead." Manipulate the par of exchange to keep pace with the tabular standard and stable prices will be secured. The steps necessary to be taken in order to establish the system are simple. First, the mints of the world must be closed to free coinage of gold, thus giving coined gold a value higher than its bullion value; second, an international statistical office would be necessary to compute index numbers in the ordinary way. Dividing the market price of gold by the index number would give an official price for gold. At this official price the government of some one country, agreed upon for the purpose, would either buy or sell gold at the option of the

public. This official price would be below the market price, if prices had advanced, and above it in cases of falling prices. In the former instance, bullion would be sold by the government for coin, thus bringing about contraction; in the latter case, by the purchase of gold the supply of money would be increased. By this process the purchasing medium of the one pivotal country would be either contracted or expanded to the extent necessary to maintain a stable price level. For the rest of the world, through exchange dealings with the gold manipulating country, price levels would also be made permanent.

One experiences serious difficulty in forming a judgment on the merits of this proposal, because it is presented merely in outline, occupying but a scant ten pages in the book. It is to be hoped that on some future occasion Professor Fisher will work out the plan in detail, and therefore the comments which I shall venture to make are to be regarded primarily as suggestions of points upon which further information is needed, and not necessarily as fatal objections to the plan itself. In the first place it may be noted that the plan does not make clear the conditions under which additions are to be made to the gold coinage by the different countries. Whether they are to come through gold exports from the country chosen as the pivot of the system, or whether each country is to coin gold, adjusting the amount with reference to the exchange situation, is not stated. In either case, it may be questioned whether the trade and financial relations of all countries are sufficiently close with any one of them to render them all directly and immediately sensitive to changes in its level of prices. Moreover, there might occur changes in the level of prices peculiar to the country selected to register changes in the official price of gold. The foreign trade position of the country might change, and in consequence changes in its price level relative to those of other countries would be necessary. A local speculative movement might also be the occasion of change in the price level. Whatever the cause, the proposed plan would seem to involve a corresponding change in the monetary situation throughout the world.

In the second place, the adjustment of prices through changes in the market price of gold would seem to subject the business of the world to a never-ending succession of abrupt changes. Professor Fisher argues that little disturbance would be caused by changes in the par of exchange. The opinion may be ventured that those who have been engaged in trade with South America would express strong dissent to such a conclusion.

There remains for consideration what would seem to be the most formidable objection to the plan. Once limit the coinage of gold, and the value of gold coin and gold bullion may diverge to an indefinite extent. If during the last fifteen years prices had been kept stationary, only a small part of the gold which has been used for monetary purposes would have been required. According to Professor Fisher's own estimate (p. 310) only one-ninth of the gold actually coined would have been needed to secure for the United States in 1909 the price level of 1896; tho probably a somewhat larger proportion would have been required in other countries, where velocities and deposit currency have been less important price-making factors. At the price level of 1896, assuming no change in the market price of gold bullion, gold production during the last fifteen years would have been considerably greater than has actually been the case. Doubtless, there would not have been an increase, but rather a decrease, on account of the impossibility of marketing, for use in the arts, without a considerable fall in price, the large amount of gold which would not have been taken for monetary purposes under Professor Fisher's plan. It is not unlikely that the market price of gold bullion measured in gold coin would have fallen as much as fifty per cent. Whether a wide difference between the value of gold bullion and coin, if that difference should be fairly constant, would have serious consequence in the working of the plan, I shall not attempt to determine. It would seem to be certain, however, that a widely fluctuating price for gold, over short periods of time, would make it unworkable. Let us suppose that the price of gold becomes

at least as unstable as that of silver during recent years. Let us suppose also that, on account of the rise in prices during the previous year, an official price for gold bullion has been declared one per cent below its current market price. It might easily happen that the price of gold bullion would almost immediately fall below the official figure; in that case, the attempt at contraction of the purchasing medium would fail.

Such criticism as this, however, is not inconsistent with full appreciation of the high qualities of the book. Professor Fisher has made a noteworthy contribution to economic science. As he points out in the preface, it is strikingly unlike his books on the *Nature of Capital and Income* and the *Rate of Interest,* in that it is distinctly conservative in matters of theory. On this account its value can be appraised with more initial certainty. The prediction may be ventured that the book will become a classic in the literature of money, and that it will also prove a starting-point for fruitful investigation in the future.

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